

Route 104 and Route 128 Intersection Study

**Town of Fairfax, Vermont
And the
Northwest Regional Planning Commission**



**Submitted by:
Wilbur Smith Associates**

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EXECUTIVE SUMMARY

The Town of Fairfax requested that the Northwest Regional Planning Commission (NRPC) prepare a concentrated analysis of the possible options for upgrading the intersection of Route 104 and Route 128 close to the village center of Fairfax. The NRPC solicited the assistance of Wilbur Smith Associates in the preparation of the analysis. The Town requested this Study, due to the growing development pressures around the intersection and the current geometry of the dual intersections, which create confusing traffic movements for motorist both on Route 104 and Route 128.

Route 128 intersects Route 104 at the northern end of a sweeping, banked curve on Route 104. Route 128 intersects McNall Road and Ramsey Road just south of the intersection, southwest of the sweeping curve. Ramsey Road heads east and intersects Route 104 at the eastern end of the sweeping curve. Route 104 is a two lane road leading towards each of the intersections.

The number of crashes at the intersection of Routes 104 and 128 does not make this intersection a high crash locations. A Level of Service (LOS) analysis of existing conditions shows that each of the approaches to all three intersections is currently operating at level of service B or better. The LOS analysis of future conditions in 2016 shows that each of the approaches to all three intersections should operate at a LOS of C, with most of the approaches operating at LOS B or A. The existing land use is still open, with several open fields directly adjacent to Route 104 in the vicinity of the northern and eastern intersections. An existing restaurant lies on the north side of Route 104 near the eastern intersection. The restaurant's parking area has two access points, one just to the west of the eastern intersection and one in the middle of the sweeping curve. There are no wetlands, critical natural areas or habitats, streams, or other important environmental resources in the immediate area surrounding the intersection of Route 104 and Route 128.

WSA prepared an initial analysis of six alternatives. **Table 3.1** provides a comparison of the six alternatives relative to their traffic improvements, safety considerations, and right-of-way impacts. **Appendix B** provides rough sketches of the six alternatives that were under consideration. The Town of Fairfax Selectboard reviewed the six alternatives and the accompanying analysis and determined that Alternatives 1, 3 and 5 were most appropriate for the Town and Route 104. **Figures 4** and **5** provide diagrams of these two alternatives.

After reviewing the three viable alternatives and the analysis information for each, WSA recommends that the NRPC and the Town consider pursuing Alternative 3 for the near future. It provides a much better intersection layout than the existing conditions and provides for a clear location for future access points to the open land northeast of Route 104. It eliminates the short term queuing problems at the eastern intersection, and resolves the issue of motor vehicles on Ramsey Road attempting to awkwardly cross Route 104 to access the restaurant parking lot. Alternative 3 also requires less new right-of-way taken from private land than Alternative 5. Finally, it also does not preclude the possibility of pursuing Alternative 5 at some point in the future if conditions change.

1.0 INTRODUCTION

1.1 Overview

The Town of Fairfax requested that the Northwest Regional Planning Commission (NRPC) prepare a concentrated analysis of the possible options for upgrading the intersection of Route 104 and Route 128 close to the village center of Fairfax. The NRPC solicited the assistance of Wilbur Smith Associates in the preparation of the analysis. The Town requested this Study, due to the growing development pressures around the intersection and the current geometry of the dual intersections, which create confusing traffic movements for motorist both on Route 104 and Route 128.

This report summarizes the results of the Study. After this Introduction, it is divided into four additional sections:

- Existing and Future Conditions;
- Proposed Alternatives;
- Preferred Alternatives; and
- Recommendations.

1.2 Purpose and Need

The purpose of the improvements is to minimize existing conflicts between through traffic on Route 104 and vehicular traffic either turning onto or off Route 104 to or from Route 128. It is also meant to eliminate conflicts in the future between existing traffic flow on route 104 and development activity that is starting to occur on the open land adjacent to Route 104 near the intersections.

The need for this intersection can be seen in the number of accidents at the two intersections and the quite variable way that drivers move through them. There is no clear route for motorists to use as they turn onto Route 104 from either route 128 or Ramsey Road.

2.0 EXISTING & FUTURE CONDITIONS

2.1 Roadway and Intersection Layout and Characteristics

Route 128 intersects Route 104 at the northern end of a sweeping, banked curve on Route 104, called the northern intersection in this report. Route 128 intersects McNall Road and Ramsey Road just south of the intersection, southwest of the sweeping curve. Ramsey Road heads east and intersects Route 104 at the eastern end of the sweeping curve, called the eastern intersection in this report. **Figure 1** shows the existing layout of the intersections. Travelers heading north on Route 128 that wish to head east on Route 104 use Ramsey Road; similarly, travelers heading west on Route 104 that wish to head south on Route 128 also use Ramsey Road to get to Route 128.

Route 104 is a two lane road leading towards each of the intersections. Each lane is approximately 12 feet wide with a two foot average paved shoulder on side of the roadway. There are no turning lanes on Route 104 at either intersection. The speed limit of Route 104 in this area is 45 MPH.

Route 128 ends at the northern intersection. It consists of just two travel lanes. The roadway widens a bit as it intersects Route 104, but there are no designated turn lanes. Ramsey Road end similarly at the eastern intersection. There are also no designated turn lanes on Ramsey Road at the eastern intersection.

Route 128 consists of two travel lanes at the intersection with Ramsey Road and Mc Nall Road. Stops signs control traffic flow on Ramsey and McNall Roads; Route 128 has no stop sign at this intersection.

2.2 Surrounding Land Use and Environmental Conditions

Figures 2 and 3 show existing land use and current zoning surrounding the intersections.

Land Use - The existing land use is still open, with several open fields directly adjacent to Route 104 in the vicinity of the northern and eastern intersections. An existing restaurant lies on the north side of Route 104 near the eastern intersection. The restaurant's parking area has two access points, one just to the west of the eastern intersection and one in the middle of the sweeping curve. At the northern end of the curve, a hardware store lies on the east side of Route 104 and a small shopping area lies directly north of that, each with their own access drives. The open parcel in between these two uses the community currently uses as a little league field, although a development proposal for at least a portion of the site is being considered by the Town of Fairfax.

A cemetery and a single family residence lie across from the hardware store and shopping center on the west side of Route 104.

A bank sits on the inside of the triangle between Route 104, Route 128 and Ramsey Road with access from Ramsey Road. An auto repair shop lies in the northern tip of the triangle, with access only from Route 128.

The remainder of the land around the intersections is currently open. Some is in agricultural use.

Zoning – The land surrounding the intersection is currently zoned for mixed use development, which allows for both commercial and residential uses. The area is considered to be an extension of the Fairfax Village area. The zoning is planned to allow and encourage village related uses and development patterns.

Natural Resources - There are no wetlands, critical natural areas or habitats, streams, or other important environmental resources in the immediate area surrounding the intersection

of Route 104 and Route 128. There are, however, wetlands, river, and floodplain resources to the north of the intersections, separated by both distance and elevation from the intersections themselves. WSA contacted several departments and programs within the Vermont Agency of Natural Resources to verify the lack of important natural resources near the intersections. Only a representative form the Non-Game and Natural Heritage Program responded, confirming the review of existing conditions. **Appendix A** includes a copy of the letter.

There are agriculturally important soils in the field south and west of the intersections.

2.3 Pedestrian and Bicycle Facilities

There are no specific bicycle or pedestrian facilities on either Route 104 or Route 128. Route 104 has a wide shoulder through the sweeping curve as well as on the roadways leading up to it from both the east and the north., which can be used by bicyclist comfortable on roads with high numbers of motor vehicles traveling at 40 miles per hour or more.

There are no sidewalks in or near the intersection of Routes 104 and 128.

2.4 Traffic Volumes

The traffic volumes used in this report were based on the latest existing A.M. and P.M. traffic counts for the intersections. The NRPC provided the data, which the Vermont Agency of Transportation (VTrans) collected manually in July 2004. WSA grew these volumes by 2 percent per year to estimate 2006 traffic volumes to represent existing conditions. They also grew the volumes by an additional 2 percent a year for ten years to estimate 2016 conditions.

2.5 Crash Data

WSA reviewed crash data in the vicinity of the northern and eastern intersections of Route 104 and Route 128 and recorded a total of seven accidents over the five year period (2000-2004). Of the seven crashes reported, three were head-on, two were angle, one was rear-end, and one was a sideswipe type accidents. There were five injury and two property damage related crashes. **Appendix B** presents more detailed information on the crash data.

The number of crashes at the intersection of Routes 104 and 128 does not make this intersection a high crash locations.

2.6 Intersection Capacity Analysis

A study of vehicular traffic capacity is important in determining the ability of a specific roadway or intersection to accommodate traffic under various levels of service. Level of service is a qualitative measure describing driver satisfaction with a number of factors that influence the degree of traffic congestion. These factors include speed and travel time,

traffic interruption, freedom of maneuverability, safety, driving comfort and convenience, and delay.

In general there are six Levels of Service describing vehicular traffic flow conditions. The highest, Level of Service A, describes a condition of free flow of vehicular traffic, with low volumes and high speeds. Level of Service B represents a stable traffic flow with operating speeds beginning to be restricted somewhat by traffic conditions. Level of Service C, which is normally used for design purposes, describes a stable condition of traffic operation. It entails moderately restricted movements due to higher traffic volumes, but traffic conditions are not objectionable to motorists. Level of Service D reflects a condition of more restrictive movements for motorists and the influence of congestion becomes more noticeable. Level of Service E is representative of the actual capacity of the roadway or intersection and involves delay to all motorists due to congestion. The lowest, Level of Service F, describes a force flow and is characterized by volumes greater than the theoretical roadway capacity. Complete congestion occurs, and in extreme cases, the volume passing a given point drops to zero. This is considered as an unacceptable traffic operating condition.

For this study, WSA performed a Level of Service (LOS) analysis for un-signalized intersections based on the *2000 Highway Capacity Manual* using the Highway Capacity Software (HCS). WSA also used RODEL software to analyze alternatives that included roundabouts. **Table 3.2** includes the results of the analysis for the existing 2006 conditions.

The LOS analysis of existing conditions shows that each of the approaches to all three intersections is currently operating at level of service B or better. The analysis does not capture a local queuing problem at the eastern intersection. Because there is not a wide paved shoulder area, vehicles waiting to turn left onto Ramsey Road create temporary queues to the east on Route 104. Additionally, numerous motorists traveling east on Ramsey Road cut diagonally across Route 104 to enter the restaurant parking lot. The banked nature of the Route 104 roadway and the higher speeds of the motorists on Route 104 make this maneuver particularly dangerous.

WSA projected traffic volumes into the future to the year 2016, based on a growth rate of 2% per year. They then performed LOS analysis for the existing northern and eastern intersections, to provide a base line by which to analyze the preferred alternatives for the difference in LOS that they may provide if implemented. **Table 3.3** shows the results of this analysis. The LOS analysis of future conditions shows that each of the approaches to all three intersections should operate at a LOS of C, with most of the approaches operating at LOS B or A.

3.0 PROPOSED ALTERNATIVES

3.1 Overview

WSA initially considered ten alternate alignment potentials for the Route 104. After an initial analysis, the potential alternatives were reduced to five. With the addition of the No Action alternative, WSA prepared an initial analysis of six alternatives. **Table 3.1** provides a

comparison of the six alternatives relative to their traffic improvements, safety considerations, and right-of-way impacts. **Appendix C** provides rough sketches of the six alternatives that were under consideration.

Alternatives 2 through 5 include wider shoulders for bicyclist and pedestrian use. No specific sidewalks or shared use paths are included in Alternatives 1 through 6. Each of the alternatives also assumes that there will be no curbs or enclosed drainage systems installed as part of any of the alternatives.

3.2 Alternative 1: No Action

The No Action alternative would result in no changes to the intersections.

3.3 Alternative 2: Simple Solution A

Alternative 2 will result in the modifications to both the northern intersection of Route 104 and Route 128 and the eastern intersection of Route 104 and Ramsey Road. Both Route 128 and Ramsey Road would be reconstructed to create a ninety degree intersection of the side roads with Route 104. The access to the restaurant on the north side of the eastern intersection would be relocated to be opposite the Ramsey Road leg of the eastern intersection, while future access to the open parcel on the northeast side of Route 104 would be located across from the Route 128 leg of the northern intersection.

Left turn lanes would be added to the southbound lanes of Route 104 at the northern intersection with Route 128, and at both the northwest and southeast bound lanes on Route 104 at the eastern intersection with Ramsey Road. No left turns would be allowed from Route 104 at the northern intersection and no right turns would be allowed from Route 104 at the southern intersection.

The northern most portion of Route 128 and the eastern most portion of Ramsey Road would be closed.

3.4 Alternative 3: Simple Solution B

Alternative 3 is similar to Alternative 2 but removes the northern intersection of Route 128 with Route 104, leaving just one intersection at the eastern end of Ramsey Road. All traffic heading north or south on Route 128 would use this intersection. It would provide access to the restaurant as well as to the open land on the northeast side of Route 104. No other new access points between the new intersection and the existing access drive to the hardware store would be allowed to properties on either side of Route 104.

Route 104 would have left turn lanes in both directions; the configuration of the two other legs of the intersection could be determined more specifically if the alternative is pursued further.

The majority of Route 128 north of the McNall/Ramsey Roads intersection would be converted to a driveway; the northern most portions of Route 128 and the eastern most portion of Ramsey Road would be closed.

3.5 Alternative 4: McNall/Route 128 Roundabout

Alternative 4 creates a modern roundabout at the intersection of Route 128, McNall Road and Ramsey Road. It would close the sweeping curve on Route 104 and all motor vehicles on Route 104 and on Route 128 would be routed through the roundabout

3.6 Alternative 5: New Intersection

Alternative five includes the creation of a new intersection of Route 128 and Route 104 midway between the existing north and south intersections and a new roadway leading to it. The new roadway would run between the existing bank buildings and auto repair shop. The access to the existing restaurant, as well as the open land to the northeast of Route 104 would be accessed through the new intersection. The existing access points to the restaurant parking area, as well as the existing northern and eastern intersections, would be closed.

Route 104 would have left turn lanes in both directions. Route 128 may have turning lanes, depending on the needs at the time that the intersection would be created.

3.7 Alternative 6: Route 104 Roundabout

Alternative 6 would create a modern roundabout at the northern intersection - Route 104 and Route 128. Future access to the open fields to the northeast of Route 104 would create the fourth access point to the roundabout. The eastern access to the restaurant parking lot would remain open, but the western access point would be closed. The eastern intersection – Route 104 and Ramsey Road, would be closed. All motor vehicle traffic would travel through the roundabout. Ramsey Road would remain open to the existing bank driveway; east of the driveway, the road would be closed.

3.8 Level of Service Analysis

Table 3.2 presents the results of the LOS analyses for the different alternatives. Under each of the alternatives considered, the study area intersections operate at LOS C or better.

**Table 3.1
Alternative Analysis**

		Traffic	Safety	Right-of-way	Land Use
Option 1	No-Build	1. No Change	1. No change	1. No impacts	1. No impacts
Option 2	Maintain both intersections	<p>1. Geometric re-alignment improves traffic flow</p> <p>2. Eliminates tight left/right turns at the two intersections</p> <p>3. Reduces conflict and/or delay due to effect of left turn speeds or queus at the eastern intersections</p>	<p>1. Improves sight lines at the northern and eastern intersections.</p> <p>2. Improves the angle of left and right turns at the intersection.</p> <p>3. Creates separate left turn lane at the eastern intersection</p> <p>4. Eliminates the potential high speed through movement southbound from VT 104 and eastbound from VT 128</p> <p>5. Creates better through conditions between Ramsey Road and the restaurant entrance</p>	<p>1. Potential need for additional ROW on the inside of the curve of each intersecting segment in order to create 90 degree intersections.</p> <p>2. Abandonment of unused roadway near intersections.</p>	<p>1. Reduction in usable land and existing parking areas for the auto repair business.</p> <p>2. Modification to the existing access points to the restaurant.</p>
Option 3	Eliminate northern intersection	<p>1. Geometric re-alignment of easterly intersection improves traffic flow</p> <p>2. Eliminates tight left turns at the easterly intersection</p>	<p>1. Improves sight lines at the eastern intersection.</p> <p>2. Improves the angle of left and right turns at the intersection.</p>	<p>1. Potential need for additional ROW on the northwest side of Ramsey Road as it intersects Rt. 104 order to create a 90 degree intersection.</p> <p>2. Abandonment of unused roadway at northern intersection and unused</p>	<p>1. Modification to the existing access points to the restaurant.</p> <p>2. Access drive to the auto repair shop becomes longer and could be considered to</p>

		Traffic	Safety	Right-of-way	Land Use
		<p>3. Reduces conflict and/or delay due to effect of left turn speeds or queues at the eastern intersection</p> <p>4. Reduces redundancy of movements/turns</p>	<p>3. Creates separate left turn lane at the eastern intersection</p> <p>4. Creates better through conditions between Ramsey Road and the restaurant entrance</p> <p>5. Eliminates the potential high speed through movement southbound from VT 104 and eastbound from VT 128</p> <p>6. Reduces the number of intersections and conflict points within the influence area.</p>	<p>portion of eastern intersection.</p>	<p>be out of the way.</p>
Option 4	<p>Roundabout at McNall Road/VT 128 Intersection</p> <p>Eliminate channelized movement</p>	<p>1. Direct single connection between VT 128 and VT 104 at McNall Road facilitates better traffic flow.</p> <p>2. Eliminates tight left/right turns at the two intersections</p> <p>3. Reduces conflict and/or delay due to effect of left turn speeds or queues at the eastern intersection</p> <p>4. Eliminates redundancy of movements/turns</p>	<p>1. Eliminates the channelized movement and the horizontal curve.</p> <p>2. Roundabout slows traffic down.</p> <p>3. Sight line issue on VT 104, VT 128 and Ramsey Road are eliminated.</p> <p>4. Improves the angle of left and right turns at the intersection.</p> <p>5. Eliminates the potential high speed through movement southbound</p>	<p>1. Requires new ROW at intersection of Route 128 and Mc Nally Road.</p> <p>2. Abandonment of existing Route 104 curve.</p>	<p>1. Potential addition of land to the parcels on either side of the Route 104 Curve.</p>

		Traffic	Safety	Right-of-way	Land Use
			from VT 104 and eastbound from VT 128 6. Reduces the number of intersections and conflict points within the influence area.		
Option 5	Re-align McNall Road/VT 128 and VT 128/VT 104 intersections	1. Geometric re-alignment improves traffic circulation 2. Eliminates tight left/right turns at the two intersections 3. Minimizes conflict and/or delay due to effect of left turn speeds or queues at the intersections 4. Eliminates redundancy of movements/turns	1. Improves sight lines from VT 104, and VT 128. 2. Reduces the number of intersections and conflict points within the influence area. 3. Improves the angle of left and right turns at the intersection. 4. Eliminates the potential high speed through movement southbound from VT 104 and eastbound from VT 128 5. Creates central access to north eastern parcel(s)	1. Requires new ROW through the middle of the center-of-the-triangle parcel. 2. Abandonment of portions of the roadways north and east of the Route 128/McNall Road/Ramsey Road intersection.	1. No significant impacts to land use.
Option 6	Roundabout the northern intersection	1. Geometric re-alignment improves traffic circulation 2. Eliminates tight left/right turns at the two intersections	1. Improves sight lines at the northern intersection. 2. Roundabout would slow traffic down.	Requires additional ROW for roundabout and realigned portion of the Route 128 approach to the roundabout; may require acquisition of structure. 2. Abandonment of the eastern portion of Ramsey Road.	1. Will most likely require the closure of the auto repair shop in its current location.

		Traffic	Safety	Right-of-way	Land Use
		<p>3. Minimizes conflict and/or delay due to effect of left turn speeds or queues at the intersections</p> <p>4. Eliminates redundancy of movements/turns</p>	<p>3. Eliminates the potential high speed eastbound through movement to VT 104.</p> <p>4. Eliminates the potential high speed through movement southbound from VT 104 and eastbound from VT 128</p> <p>5. Improves the angle of left and right turns at the intersection.</p>		

Table 3.2
Level of Service Analysis 2006

Intersection	Existing Conditions (2006)											
	Opt. 1 (No-Build)		Option 2		Option 3		Option 4		Option 5		Option 6	
	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM	AM	PM
<u>VT 104/VT 128</u>												
<u>Overall LOS</u>	-	-	-	-	-	-	-	-	-	-	-	-
VT 104 WB approach												
<i>Left onto VT 128</i>	A (8.1)	A (8.3)	A (8.1)	A (8.3)	-	-	-	-	A (8.5)	A (8.5)	A (8.5)	A (8.5)
VT 128 NB approach	B (14.2)	C (15.5)	B (14.2)	C (15.5)	-	-	-	-	C (19.4)	C (18.5)	C (19.4)	C (18.5)
VT 104 SB approach	-	-	-	-	-	-	-	-	-	-		
<u>VT 104/McNall Road</u>												
McNall Road EB approach	B (10.7)	B (10.5)	B (10.7)	B (10.5)	C (24.2)	C (20.9)	A (9.7)	A (9.9)	-	-	-	-
Restaurant WB approach	-	-	-	-	-	-	-	-	B(11.8)	B(12.1)	B(11.8)	B(12.1)
VT 104 NB approach												
<i>Left onto McNall Road</i>	A (8.0)	A (7.9)	A (8.0)	A (7.9)	A (8.7)	A (8.6)	A (8.2)	A (7.8)	-	-	-	-
VT 104 SB approach												
<i>Left onto Restaurant</i>	A (7.9)	A (7.8)	A (7.9)	A (7.8)	A (7.8)	A (7.8)	-	-	A (8.5)	A (8.0)	A (8.2)	A (8.0)
<u>VT 128/McNall Road</u>												
<u>Overall LOS</u>	-	-	-	-	-	-	-	-	-	-	-	-
McNall Road EB approach	B (10.8)	B (11.1)	B (10.8)	B (11.1)	A (9.1)	A (9.3)	C (17.1)	C (21.5)	B (11.1)	B (11.1)	B (12.0)	B (12.0)
McNall Road WB approach	B (12.8)	B (12.5)	B (12.8)	B (12.5)	B (11.6)	B (11.6)	C (24.3)	C (21.5)	-	-	B (12.8)	B (13.1)
VT 128 NB approach												
<i>Left onto McNall Road</i>	A (7..7)	A (7..7)	A (7..7)	A (7..7)	A (7.2)	A (7.2)	A (7.7)	A (7.7)	A (8.0)	A (7.9)	A (8.0)	A (7.9)
VT 128 SB approach												
<i>Left onto McNall Road</i>	A (7.5)	A (7.5)	A (7.5)	A (7.5)	A (7.5)	A (7.7)	A (7.8)	A (8.2)	-	-	A (7.5)	A (7.7)

Table 3.3
Level of Service Analysis 2016

Intersection	Future Conditions (2016)					
	Opt. 1 (No-Build)		Option 3		Option 5	
	AM	PM	AM	PM	AM	PM
<u>VT 104/VT 128</u>						
<u>Overall LOS</u>	-	-	-	-	-	-
VT 104 WB approach						
<i>Left onto VT 128</i>	A (8.4)	A (8.6)	-	-	A (8.9)	A (8.9)
VT 128 NB approach	C (17.3)	C (19.5)	-	-	C (23.2)	C (21.2)
VT 104 SB approach	-	-	-	-	-	-
<u>VT 104/McNall Road</u>						
McNall Road EB approach	B (11.5)	B (11.3)	E (47.5)	E (40.2)	-	-
Restaurant WB approach	C (19.9)	C (17.7)	D (26.2)	C (23.4)	B(14.8)	C (16.0)
VT 104 NB approach						
<i>Left onto McNall Road</i>	A (8.2)	A (8.1)	A (9.2)	A (9.0)	-	-
VT 104 SB approach						
<i>Left onto Restaurant</i>	A (8.1)	A (8.0)	A (8.0)	A (8.0)	A (8.4)	A (8.2)
<u>VT 128/McNall Road</u>						
<u>Overall LOS</u>	-	-				
McNall Road EB approach	B (11.4)	B (11.9)	B (12.0)	B (11.9)	B (12.0)	B (11.9)
McNall Road WB approach	B (14.7)	B (14.1)	-	-	-	-
VT 128 NB approach						
<i>Left onto McNall Road</i>	A (7.9)	A (7.9)	A (8.2)	A (8.1)	A (8.2)	A (8.1)
VT 128 SB approach						
<i>Left onto McNall Road</i>	A (7.6)	A (7.8)	-	-	-	-

4.0 PREFERRED ALTERNATIVES

The Town of Fairfax Selectboard reviewed the six alternatives and the accompanying analysis and determined that Alternatives 1, 3 and 5 were most appropriate for the Town and Route 104. They requested that additional information on cost and right of way implications be developed for Alternatives 3 and 5.

Very initial estimates of probably construction costs indicate the Alternative 3 would cost on the order of \$525,000 while Alternative 5 would cost on the order of \$625,000, excluding right-of-way acquisition costs in 2006 dollars. The two alternatives are relatively close together in cost because the primary difference between the two is the length of new roadway for Route 128 south of the new intersection to an existing alignment to be used as Route 128. The length of roadway to be abandoned and removed is also similar for both for each alternative.

Alternative 1 would require no additional right-of-way. Alternative 3 would require a minimal acreage of new right-of-way, with the potential for needing even more if the location of the intersection if moved even further to the north. Alternative 5 would require slightly more acreage of new right-of-way, taken primarily from the bank property with a minimal amount needed from the auto repair parcel.

5.0 RECOMMENDATIONS

After reviewing the three viable alternatives and the analysis information for each, WSA recommends that the NRPC and the Town consider pursuing Alternative 3 for the near future. It provides a much better intersection layout than the existing condition of Alternative 1 and provides for a clear location for future access points to the open land northeast of Route 104. It eliminates the short term queuing problems at the eastern intersection, and resolves the issue of motor vehicles on Ramsey Road attempting to awkwardly cross Route 104 to access the restaurant parking lot. Alternative 3 also requires less new right-of-way taken from private land than Alternative 5. Finally, it also does not preclude the possibility of pursuing Alternative 5 at some point in the future if conditions change.

The specific location of the intersection can be determined at a later date if this alternative is pursued. Figure 4 shows it at the furthest east that it should be located. It could be shifted further to the west, creating a long straight roadway section leading up to the intersection on Route 128. It would also place the curve of the roadway closer to the bank driveway, and require a greater use of the bank property for right-of-way.

The need for sidewalks in and around the intersection, of the widened Route 104 can also be examined in more detail if the alternative is pursued.

FIGURES

APPENDIX A

Route 104/Route 128 Intersection Analysis
Northwest Regional Planning Commission & The Town of Fairfax, Vermont



Nongame & Natural Heritage Program
Department of Fish & Wildlife
103 South Main St., #10 South
Waterbury, Vermont 05671-0501
www.VtFishandWildlife.com

[phone] 802-241-3700
[fax] 802-241-3295
[tdd] 802-828-3345

Agency Of Natural Resources

14 August 2006

Sandra O'Flaherty
Wilbur Smith Associates
Shelburne Commons
4076 Shelburne Road, Suite 7
Shelburne, VT 05482

Re: Route 104/128 Intersection, Fairfax

Dear Ms. O'Flaherty:

I am responding to your request for our review of the above-referenced project. A search of our database reveals no known occurrences of significant natural communities or rare, threatened, or endangered animals or plants at this site or in the immediate vicinity. For your information, our program has not conducted a field inventory of the site in response to your request.

Given the nature of the site and the limited scope of the project I do not see a need to review the alternative alignments as they are developed.

Thank you for consulting with the Nongame and Natural Heritage Program. Please contact me, or Everett Marshall (241-3715), if we can be of further assistance.

Sincerely,

A handwritten signature in black ink, appearing to read "Jodi Shippee", with a long, sweeping underline that extends across the page.

Jodi Shippee
Database Assistant
Tel: 802-241-4230
Email: Jodi.Shippee@state.vt.us

cc: Everett Marshall, Biologist/Data Manager



Protecting and conserving our fish, wildlife, plants, and their habitats for the people of Vermont.

APPENDIX B

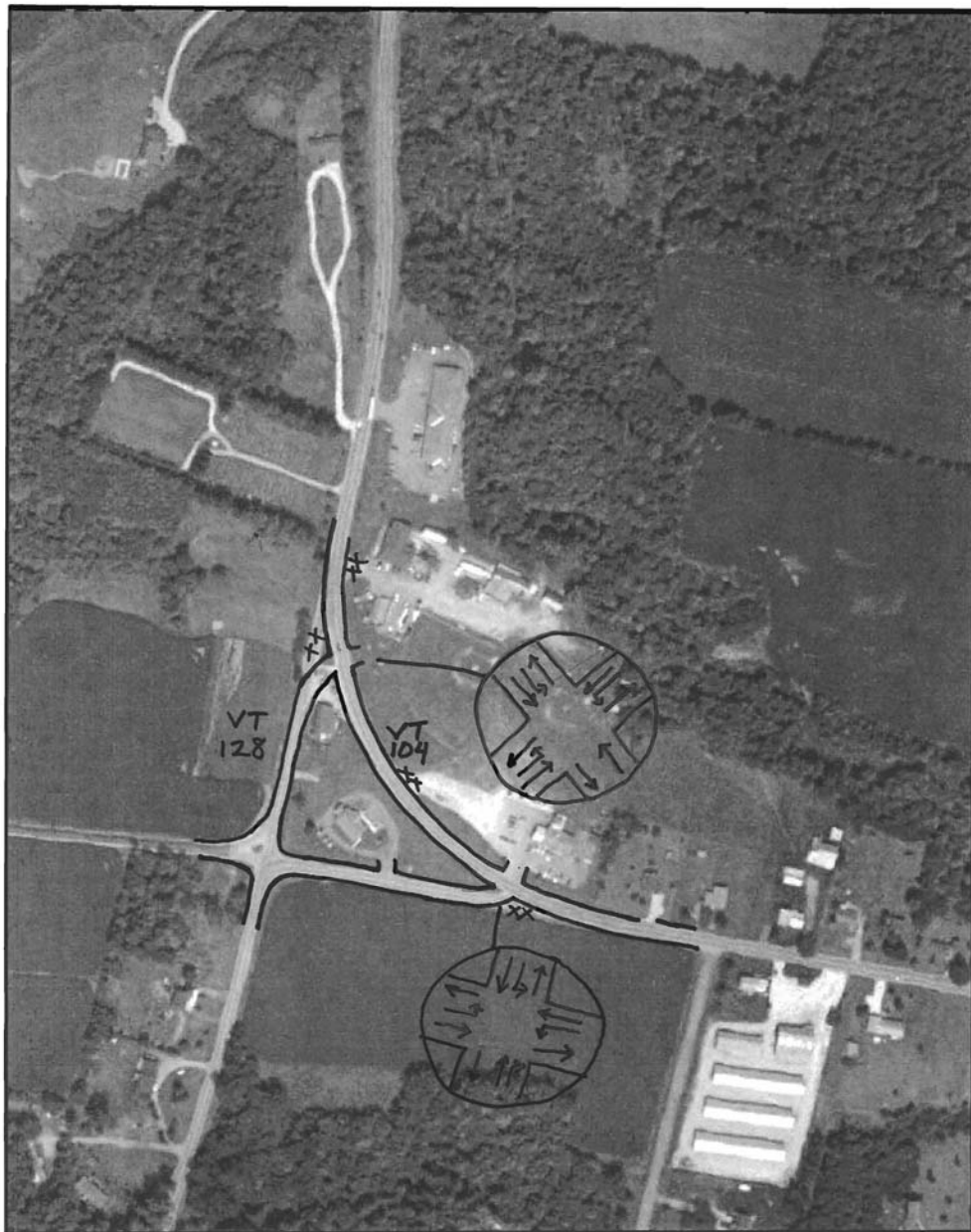
Route 104/Route 128 Intersection Analysis
Northwest Regional Planning Commission & The Town of Fairfax, Vermont

Route 104 & Route 128 Intersection Study
Crash Data

Reporting Agency Numbers	Town	Mile Marker	Date	Time	Weather	Contributing Circumstances	Direction of Collision	Number of Injuries	Number of Fatalities	Direction	Road Group
0604/11705	Fairfax	4.45	1/27/2001	17:30	snow	made improper turn		2	0	s	SH
0613/15834-04	Fairfax	4.45	12/7/2004	14:45	cloudy	failed to yield right of way. Under the influence of medication/drugs/alcohol. No improper driving	left turn and thru, broadside	0	0	s	SH
0613/12452-03	Fairfax	4.56	10/19/2003	19:09	clear	no improper driving, failed to yield right of way	head on	2	0	n	SH
0613/5066-02	Fairfax	4.6	5/11/2002	11:29	clear	no improper driving, other improper action, followed too closely	same direction sideswipe	0	0	e	SH
0612/15451-04	Fairfax	4.64	11/27/2004	20:14	clear	under the influence of medication/drugs/alcohol. Failure to keep in proper lane or running off road, no improper driving	head on	1	0	n	SH
0604/10812	Fairfax	4.66	11/5/2000	14:50	cloudy	failed to yield right of way	head on	4	0	s	SH
0613/11681-03	Fairfax	4.7	10/3/2003	16:03	cloudy	followed too closely, unknown	rear end	1	0	s	SH

APPENDIX C

Alternative 2



Option 1a: Maintain both intersections

Study Area

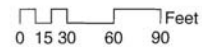
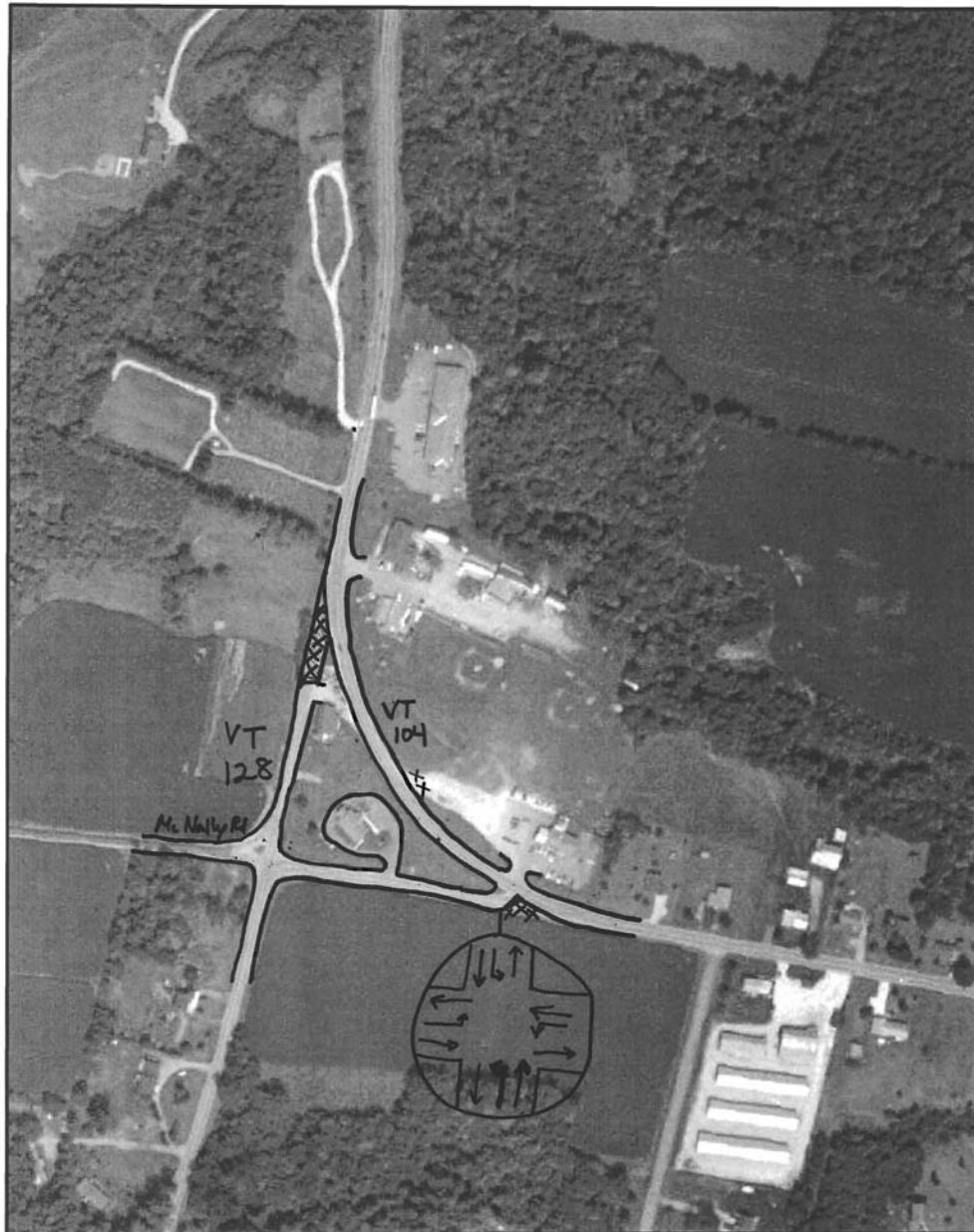


Figure 1

Route 104/Route 128 Intersection Study
The Northwest Regional Planning Commission, Fairfax, Vermont

Alternative 3



Option 1b: Eliminate northern intersection

Study Area

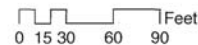
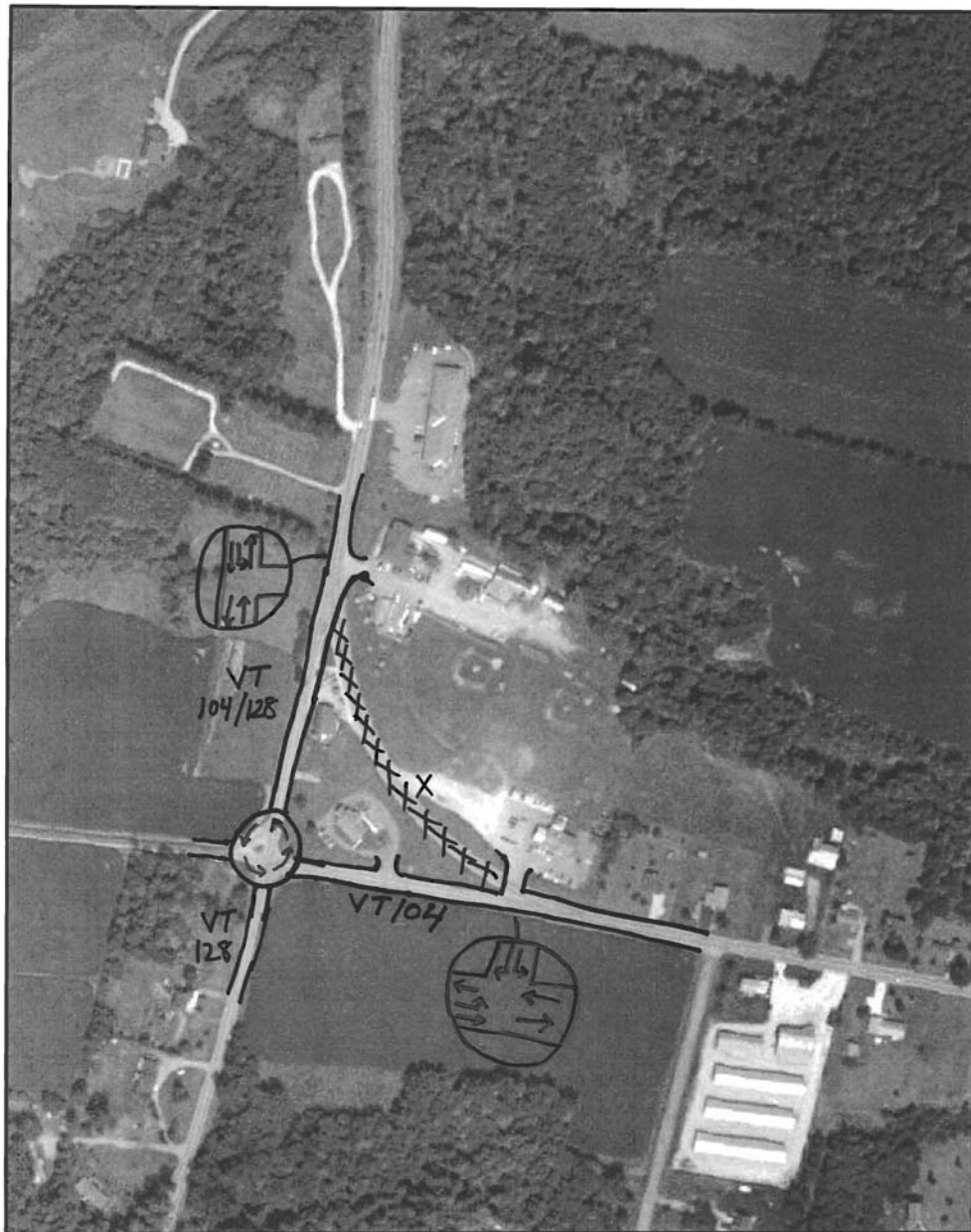


Figure 1

Route 104/Route 128 Intersection Study
The Northwest Regional Planning Commission, Fairfax, Vermont

Map for 1b

Alternative 4



Option 2: Roundabout, eliminate one-way channelized movement

Study Area



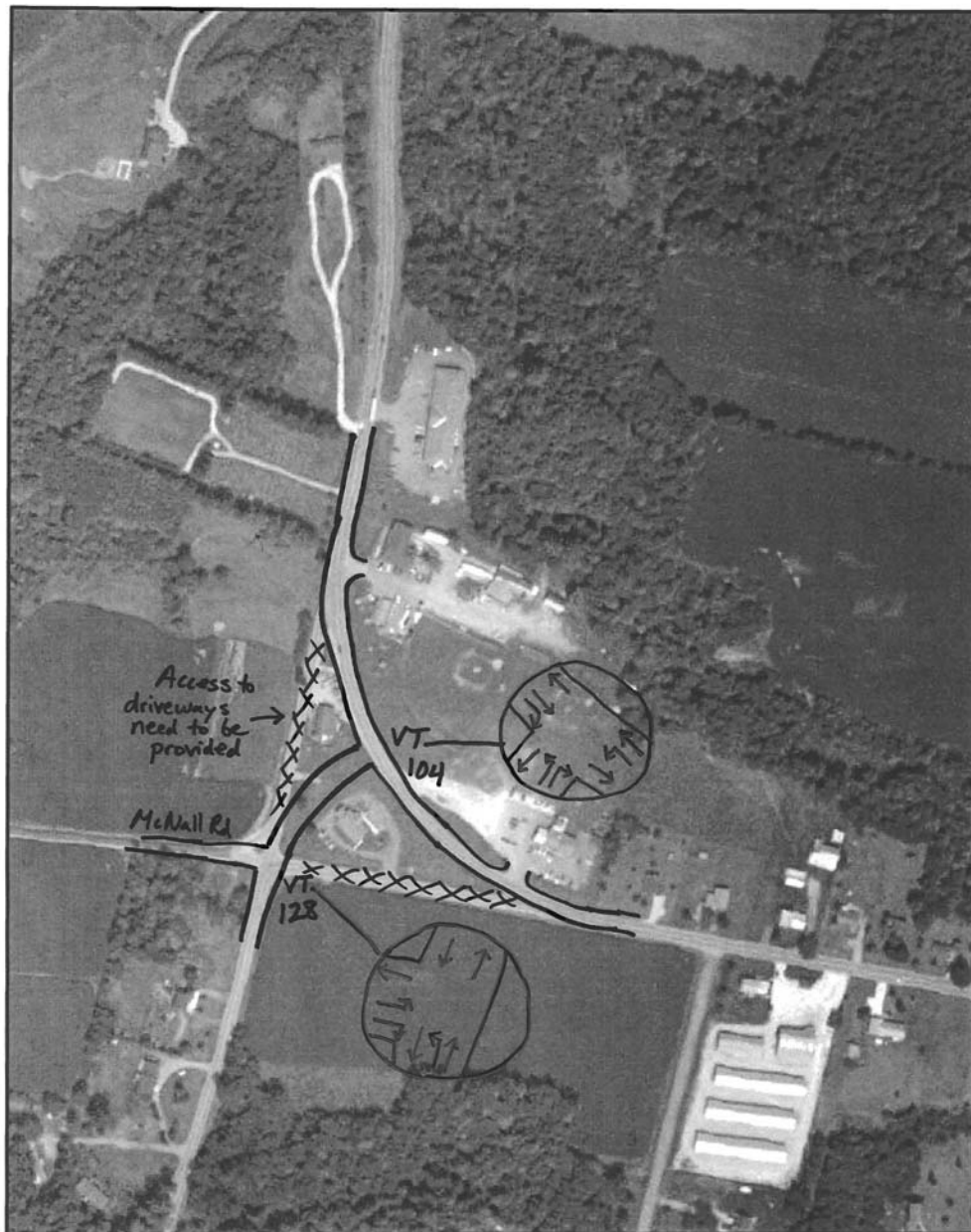
0 15 30 60 90 Feet



Figure 1

Route 104/Route 128 Intersection Study
The Northwest Regional Planning Commission, Fairfax, Vermont

Alternative 5



Option 3: Realign intersection

Study Area

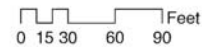
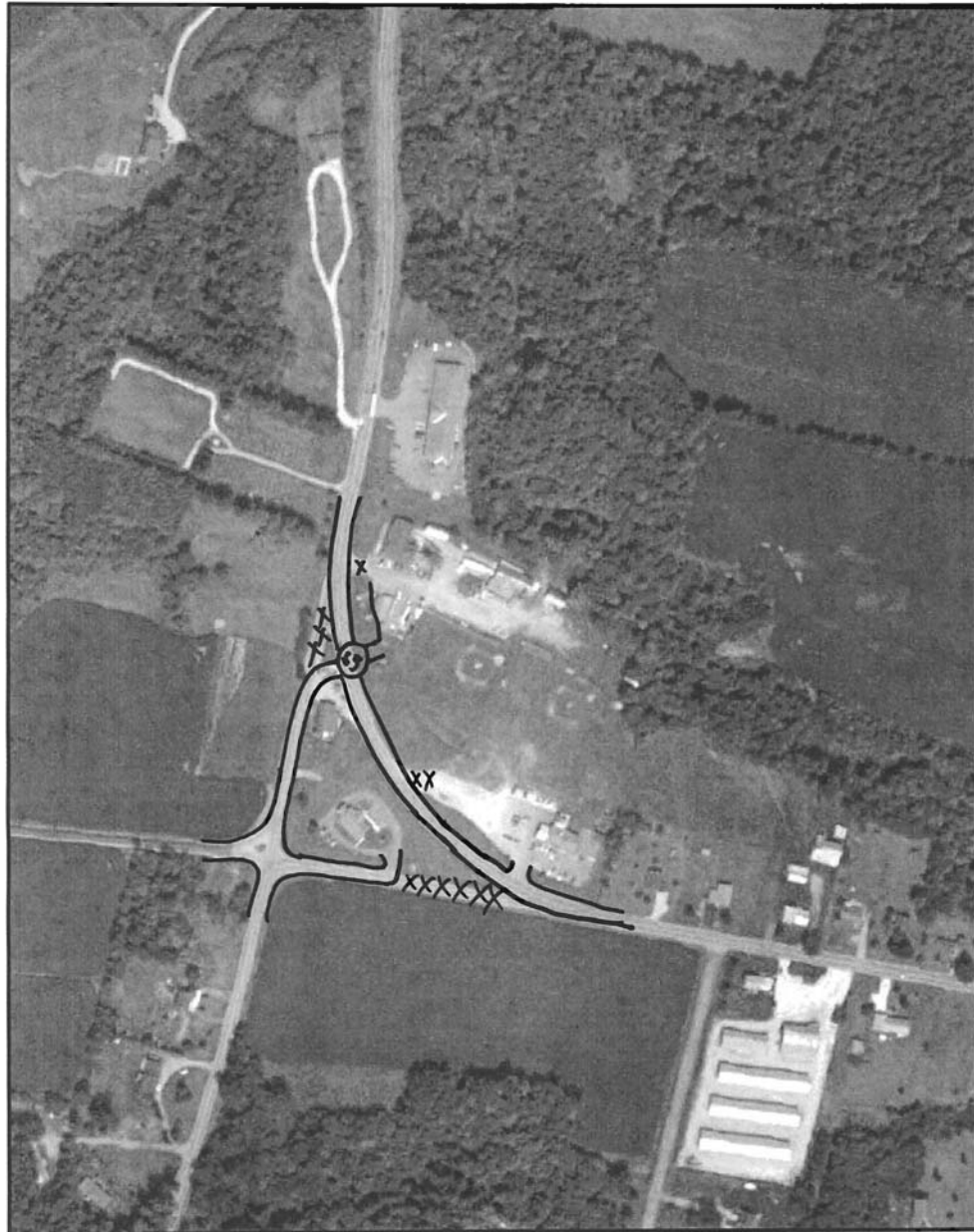


Figure 1

Route 104/Route 128 Intersection Study
The Northwest Regional Planning Commission, Fairfax, Vermont

Skidmore's Option 3

Alternative 6



Option 4: Roundabout

Study Area

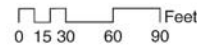


Figure 1

Route 104/Route 128 Intersection Study
The Northwest Regional Planning Commission, Fairfax, Vermont